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ORIGINAL

LITIGATION TECHNICAL SUPPORT AND SERVICES

ROCKY MOUNTAIN ARSENAL

DRAFT FINAL
TECHNICAL PLAN

March 1987
Contract No. DAAK11-84-D-0017
TASK NO. 32 - SAMPLING WASTES HANDLING

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Prepared for:

U.S. ARMY PROGRAM MANAGER'S OFFICE FOR
ROCKY MOUNTAIN ARSENAL CONTAMINATION CLEANUP

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THIS DRAFT FINAL TECHNICAL PLAN FOR TASK 32 DESCRIBES THE WORK ASSOCIATED WITH ALL FIELD ACTIVITIES TO HANDLE ANY LIQUID OR SOLID WASTE GENERATED AS PART OF ANY REMEDIAL INVESTIGATION/FEASIBILITY STUDY EFFORTS AT RMA.

THE MAJOR OBJECTIVE OF TASK 32 IS TO PROVIDE SUPPORT TO OTHER RI/FS TASKS FOR THE COLLECTION, INDENTIFICATION, STORAGE, AND POSSIBLE DISPOSAL OF ALL POTENTIALLY CONTAMINATED WASTES GENERATED DURING FIELD ACTIVITIES.

DRUMMED SOLID WASTES ARE STORED IN BLD732B. PURGE WATER IS DISPOSED OF INTO ONE OF THE BOUNDARY SYSTEMS OR THE SOUTH PLANTS LIQUID WASTE TREATMENT FACILITY. SOIL CORES WILL BE STORED IN BLD728.

ALL TASKS WHICH GENERATE LARGE QUANTITIES OF WASTES WILL INCLUDE THE TRANSPORTATION AND STORAGE OF THESE WASTES. TASK 32 WILL BE RESPONSIBLE FOR SETTING THE GUIDELINES AND PROCEDURES FOR HANDLING THE WASTE.

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1.0 INTRODUCTION

The Program Manager's Office for the Rocky Mountain Arsenal Contamination Cleanup (PMO) is overseeing efforts by two contractor teams, Ebasco Services Incorporated (Ebasco) and Environmental Science and Engineering (ESE), to identify the nature and extent of contamination at selected sites on Rocky Mountain Arsenal (RMA). The Task 32 Technical Plan describes the work associated with all field activities to handle any liquid or solid waste generated as part of the Comprehensive Environmental Response Compensation and Liability Act of 1980, as amended ("CERCLA"). Remedial Investigation/ Feasibility Study (RI/FS) field efforts and any past and future PMO/RMA RI/FS efforts at RMA. The major objective of Task 32 is to provide support to other RI/FS tasks for the collection, identification, storage, and possible disposal of all potentially contaminated wastes generated during field activities.

Currently, all of the wastes are drummed or stored in holding tanks, sampled and analyzed, and then stored or disposed according to established procedures. In the future, all wastes except purge water will be handled as above. Purge water will be disposed as soon as possible after generation (if the contaminant characteristics are known) into one of the boundary containment systems or into the South Plants Laboratory Waste Treatment Facility (SPLWTF). However, if the purge water is from a newly installed well or a well with no known chemical history, it will be held until the results of chemical analyses are reported. In addition, if large quantities of wastes are generated during field activities, Task 32 will be responsible only for establishing the procedures and guidelines for handling the waste. Each task will include the transportation and storage of the wastes generated under that task. All undisposed wastes generated in tasks will be stored in buildings in drums or in bulk holding tanks near the contractor decontamination pad north of December 7th Avenue. Future maintenance and inspection of the storage spaces will be included in Task 32. Ebasco will maintain several databases including an existing drum waste inventory, disposed drum waste inventory, disposed purge water inventory, disposed decontamination water inventory, bulk solids inventory, and the chemical analyses of bulk holding tanks and drummed materials. In addition, design, procurement, and construction of an air stripper, an addition to the SPLWTF, will be completed under this task.

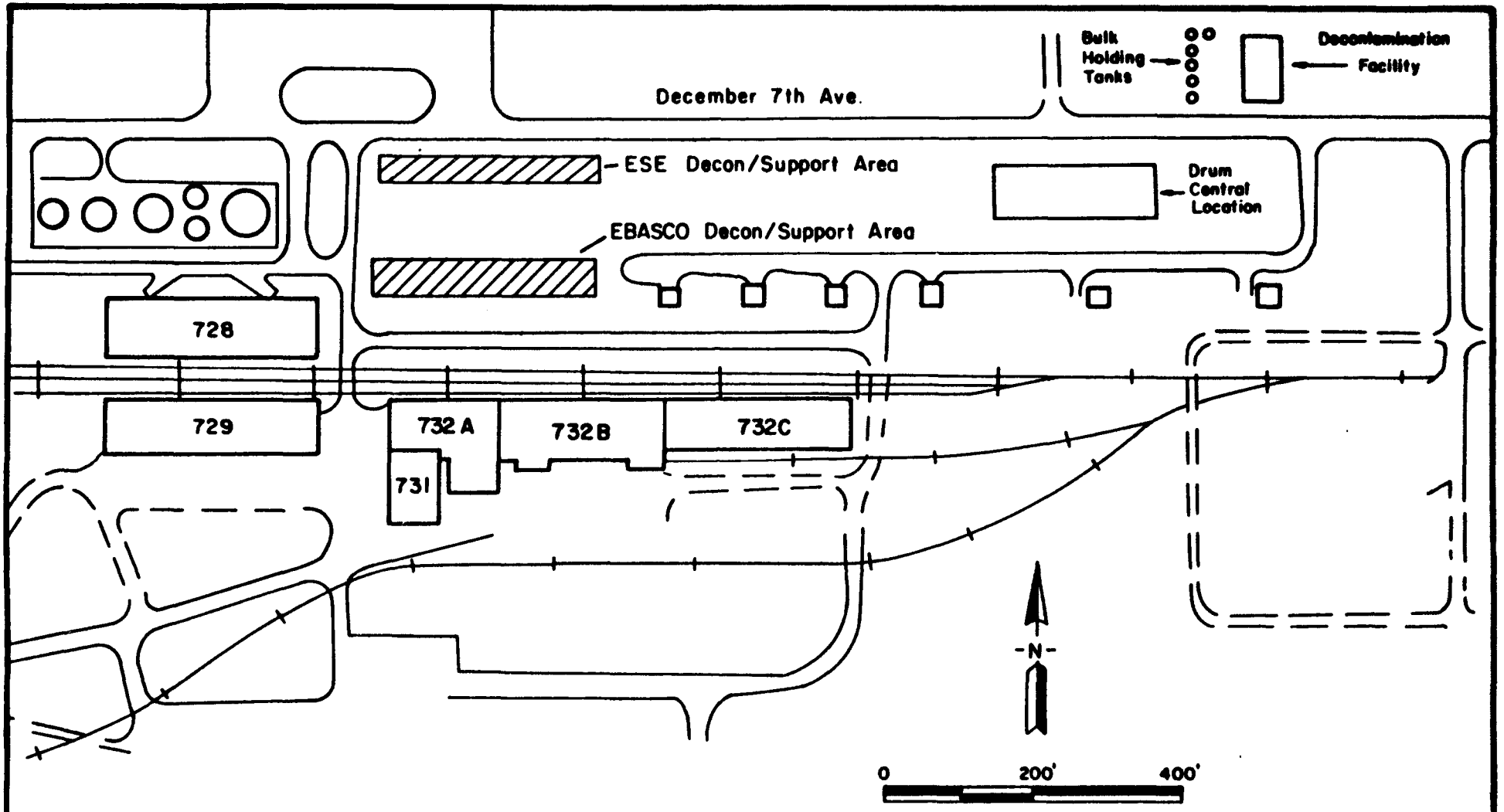
2.0 EVALUATION OF WASTE TYPES GENERATED DURING RMA FIELD OPERATIONS

2.1 CURRENT AND PAST OPERATIONS

The types of wastes that can be generated during field operations at the RMA include:

- Drummed solids, including soil cuttings from drilling operations, soils from the RMA Laboratory that have been tested for Army agent contamination, used clothing, and debris;
- Drummed well water, including all types of well development and purge water;
- Drummed decontamination water;
- Drummed unknown waste including miscellaneous items such as mixed solids, liquids, clothing, and sludges;
- Bulk liquids from decontamination activities and well pump tests; and
- Bulk solids, including soils, ash, etc.

In the past, all drummed wastes were transported from the point of generation and stored near Ebasco's decontamination trailer or on the gravel pad east of the support area (Figure 32-1). In March 1986, a storage facility, Building 732B, was provided by PMO/RMA to store the drummed solid wastes. Building 732B has an area of approximately 3100 square feet (ft^2) and has a drum storage capacity of 620. The building is unheated and no liquid wastes have been placed there. The storage facility has been modified to meet substantive Resource Conservation and Recovery Act (RCRA) requirements for solid wastes. All floor drains and cracks in the floor have been plugged. Because this building is used solely for the storage of solid materials, no liquid waste-specific facilities have been installed in the facility, e.g. showers, eyewashes, or berms.



Prepared for:

Program Manager's Office for
Rocky Mountain Arsenal Cleanup
Aberdeen Proving Ground, Maryland

FIGURE 31-1
Support Facility Locations in the South Plants Area
Rocky Mountain Arsenal, Task 32
Prepared by: Ebasco Services Incorporated

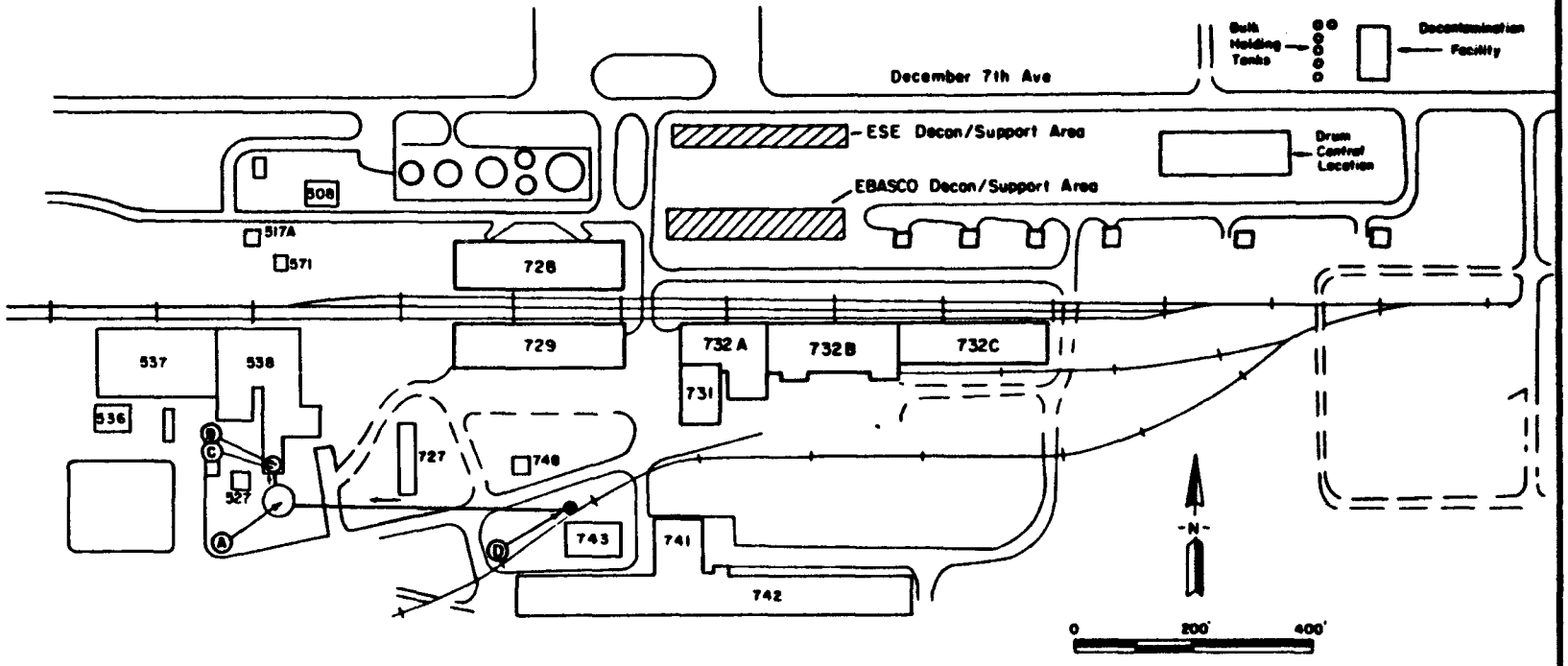
In March 1986, an inventory of all drums containing waste generated by either contractor team was prepared. Drummed liquids have been stored on a gravel pad outside of Building 732B. The bulk holding tanks near the decontamination facility have been used to store water from all equipment decontamination activities supporting the RI/FS at RMA. The soil cores have been stored in each contractor's warehouse, or stored in a bunker east of the support area.

2.2 CURRENT STATUS

At the present time, all drummed wastes have been inventoried and stored. The solid materials storage facility is filled to capacity and cannot readily be modified to store liquid wastes. As of February 5, 1987, there were approximately 1922 drums inside and outside of Building 732B and on the gravel pad east of the support area. Presently, there are 503 soil drums, 852 groundwater drums, 38 decontamination water drums, 406 used clothing drums, and 123 miscellaneous drums (containing unknown and mixed solids, liquids, and trash). All of the 4-ft soil cores are stored in Building 728, and 1-ft soil cores are stored in a bunker east of the support area. The bulk liquids are stored near the decontamination facility in bulk holding tanks.

2.3 FUTURE OPTIONS

In the future, drums will be moved from a central location (the gravel pad east of the support area) to the long-term storage facility and inventoried on a bimonthly basis. All soil cores from Ebasco, ESE, and PMO/RMA RI/FS operations will be stored together in Building 728. The bulk holding tanks, near the decontamination facility, will be monitored weekly for storage capacity. Decontamination water will continue to be analyzed for RMA target analytes and, assuming that the contaminants found in the water are judged to be treatable, will be disposed quarterly or as required through the SPLWTF. The SPLWTF facility layout is shown in Figure 32-2. The SPLWTF facility will be modified to include an air stripper unit for improved volatile organics removal. Disposal of soil drums will be based upon analytical results of their respective soil cores. Purge water with known historical contaminant characteristics will be inventoried and disposed. Purge water will be disposed through the various boundary containment treatment systems or in the SPLWTF as it is generated. Bulk solids will be handled under the tasks in which they are generated, but Task 32 will establish the procedures for their storage.



Legend

- Direction of Flow
- (A) 170,000 gallon holding tank for South Plants Laboratory Waste Treatment Facility
- (B) South Plants Laboratory Waste Treatment Facility
- (C) Discharge to Sanitary Sewer System
- (D) RMA Laboratory Sump

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Prepared Manager's Office for
Rocky Mountain Arsenal Cleanup
Aberdeen Proving Ground, Maryland

FIGURE 32-2

South Plants Laboratory Waste Treatment Facility

Rocky Mountain Arsenal, Task 32

Prepared by: Ebasco Services Incorporated

3.0 FIELD ACTIVITIES PROGRAM

3.1 INTRODUCTION

The purpose of Task 32 is to track and record all wastes generated during RI/FS field activities at RMA, and to establish procedures for the transportation, identification, storage, and tracking of all wastes. In addition, the PMO will consider and evaluate options for the disposal of all waste types. The procedures for handling waste materials from field operations are outlined in Section 3.3 of this Technical Plan.

3.2 LIMITATIONS AND RESPONSIBILITIES

3.2.1 Drum Usage and Pickup

The drums used to hold any type of waste generated from a particular task will be provided by that task. Also, moving of the drums from each point of generation (e.g., drill site) to the central location east of the support area (Figure 32-1) will be part of each task and the responsibility of the respective contractor.

3.2.2 Decontamination Facility

The Decontamination Facility northeast of the support area will be maintained by ESE, except for the disposal of waste water in the bulk holding tanks. ESE's responsibility will include general cleanup of the facility, transfer of the decontamination water from the sump to the bulk holding tanks, and maintenance and cleaning of the sump pump and steam cleaner. Ebasco's responsibility will be to move waste water from the bulk holding tanks to the PMO/RMA-provided SPLWTF. Ebasco will sample and analyze the SPLWTF after disposal of decontamination water over a period of time, not to exceed a week, depending upon the amount of waste that was disposed.

3.2.3 Chemical Analysis

All samples taken from the bulk holding tanks and the SPLWTF (influent and effluent) will be analyzed by Ebasco. The sampling procedures for the bulk holding tanks and the SPLWTF are shown in Appendices A and B, respectively.

3.2.4 PMO/RMA

PMO/RMA will be responsible for several Task 32 activities. These responsibilities include:

- Initial maintenance and cleaning of the storage facilities;
- Maintenance and operation of the SPLWTF during the disposal of well water and the decontamination water from the bulk holding tanks;
- Maintenance and operation of the boundary containment systems during the disposal of well water generated during field activities;

3.2.5 Operations Not Included in Task 32

All tasks which will generate large quantities of solid wastes at a particular site will include the transportation and storage of these wastes. Task 32 will be responsible only for setting the guidelines and procedures for handling the waste.

3.3 WASTE MANAGEMENT PROGRAM

The RI/FS field activities conducted at RMA involve drilling and well installation, soil and groundwater sampling, and other field investigation activities. Wastes generated during these operations include soil cuttings, purge water from monitoring wells, used protective clothing, trash, and liquids from decontamination. This technical plan addresses the procedures for handling, identifying, storing, tracking, and recording the wastes that are being generated during field activities. Presently, all wastes are stored pending the analytical results from the field investigations of the soils, groundwater, and decontamination water, if they were sampled. These results will be used to assess whether the wastes are considered uncontaminated or contaminated. If the wastes are considered uncontaminated, immediate disposal will be arranged. In addition, purge water will be disposed and bulk solids will be transported and stored at designated locations as soon as possible after generation. A solution has not been established for final disposal of the contaminated and unclassified wastes. Final disposal may occur after the

RI/FS has been completed. Until analytical results are known and final treatment and disposal options have been selected, all potentially contaminated wastes will be held in a storage facility or in the bulk holding tanks.

The first step in assessing the ultimate disposition of these wastes is to inventory and classify them into one of the six general categories listed in Section 2.1. This inventory will include locating and labeling all drummed waste, tracking the bulk holding tanks usage, and tracking the disposed purge water and stored bulk solids. All available analytical results on the waste placed in each waste drum and tank will be collected so that the status of the contents of each container can be ascertained. Purge water will be inventoried when disposed through the boundary containment systems or the SPLWTF. Bulk solids will be inventoried under their respective tasks when they are generated and stored. In addition, the soil cores (Ebasco, ESE, and PMO/RMA) corresponding to each soil boring will be stored in Building 728. Several forms have been designed for inventory, storage, etc., which will be filled out and properly documented.

An estimate will be prepared of the total amount of waste that will be generated during the RI/FS stage. This projection will be based upon past experience and estimates by the Task Managers of expected future field activities, including the number of borings, excavations, well sampling, and related activities that may be necessary. This current inventory and projection of future waste quantities will be used to assess how much and what types of storage will be necessary for drums.

3.3.1 Handling of Wastes

Packaging of wastes (soil, well water, etc.) generated at RMA will proceed along the guidelines set by the U.S. Environmental Protection Agency, Region VIII (EPA) (Appendix C). In general, wastes generated at sites known to be contaminated, either at the surface or subsurface, will be drummed. Wastes generated at uncontaminated sites or potentially contaminated sites will be drummed only if the field screening techniques indicate possible contamination. If the screening techniques indicate no likelihood of possible

contamination, material will be disposed in the most practical way (e.g. spread on the ground in the area of the boring or well).

Labels will be attached to each container of packaged wastes. All labels will contain the following information, as appropriate:

- Date waste/sample generated,
- Task number,
- Section number,
- Site location,
- Well/boring number,
- Generator,
- Geologist's initials,
- Description of contents,
- Inventory number, and
- Location after inventory.

The drummed waste will be tracked using the form shown in Figure 32-3.

If the chemical characteristics of the contaminants found in purge water of a particular well are known and are judged to be compatible with the boundary treatment system or the SPLWTF, the purge water will be disposed on the day of generation. The disposed purge water will be tracked using the form shown in Figure 32-4. If the water quality history of the well is unknown, the groundwater will be held until analysis is available.

Figure 32

Drum Inventory Form
Rocky Mountain Arsenal

Date: _____ Geologist initials: _____ Total # of drums collected _____ Page ___ of _____

Drum #	Generator	Date of Drum	Contents	Task	Sec.	Site	Well/Boring Number	Present location
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								

Task 32 Tech. Plan
0008x
Rev. 2/27/87

FIGURE 32-4

PURGE WATER DISPOSAL FORM

ROCKY MOUNTAIN ARSENAL

DATE _____

CONTRACTOR _____

TASK NO. _____ SECTION NO. _____ SITE NO. _____

WELL NUMBER(S) _____

TOTAL NUMBER OF GALLONS DISPOSED _____

DISPOSAL LOCATION _____

MISC. INFORMATION _____

GEOLOGIST'S INITIALS _____

When large quantities of solid wastes are generated and are judged to be contaminated, the wastes will be transported and stored under the respective tasks and will follow the guidelines and procedures set by Task 32. The stored solids will be tracked by using the form shown in Figure 32-5. Bulk holding tank usage will be monitored weekly using the form shown in Figure 32-6.

3.3.2 Inventory, Transportation, and Storage

All drummed wastes, except for purge water and large quantities of solids (bulk solids), that have not been stored will be inventoried on a bimonthly basis and then placed in a storage facility. Purge water and bulk solids will be inventoried on a generation basis, and bulk holding tank usage will be inventoried on a weekly basis. All information collected concerning drums, purge water disposal, bulk solid storage, and bulk holding tanks will be entered into a computerized database. All analytical results from the soil borings or well samples associated with the soil or liquid drums will be retained for use in selecting a disposal method. Purge water, which will be disposed as soon as possible after generation, will also be inventoried. Bulk solids will be inventoried when transportation and storage is completed by the task which generated these wastes.

Drummed waste will be delivered to the appropriate storage area after it is inventoried. The current storage facilities for drums are Building 732B and Building 785 (Figure 32-7), which is currently being modified for the storage of hazardous wastes. The storage facility for soil cores is Building 728.

Midifications will be necessary in order to meet minimum technical requirements before Building 785 can be used. These applicable , relevant and appropriate requirements are found in RCRA regulations 40 CFR 264, Subpart I, Use and Management of Containers, Sections 170-178 (parallel provisions are found in the regulations of the Colorado Department of Health). The requirements to be met and modifications necessary for solid waste storage are as follows:

FIGURE 32-5

BULK SOLIDS STORAGE FORM

ROCKY MOUNTAIN ARSENAL

DATE _____

CONTRACTOR _____

TASK NO. _____ SECTION NO. _____ SITE NO. _____

DESCRIPTION OF SOLIDS _____

TOTAL NUMBER OF CUBIC YARDS STORED _____

STORAGE LOCATION _____

MISC. INFORMATION _____

GEOLOGIST'S INITIALS _____

Figure 32-6

BULK HOLDING TANKS STORAGE USAGE

WEEKLY INSPECTION SHEET

INSPECTOR _____

SIGNATURE _____

DATE _____ **TIME** _____

AMOUNT OF SPACE LEFT IN TANKS _____

_____

DAMAGES _____

_____

COMMENTS _____

_____

_____

_____

_____

_____

_____

_____

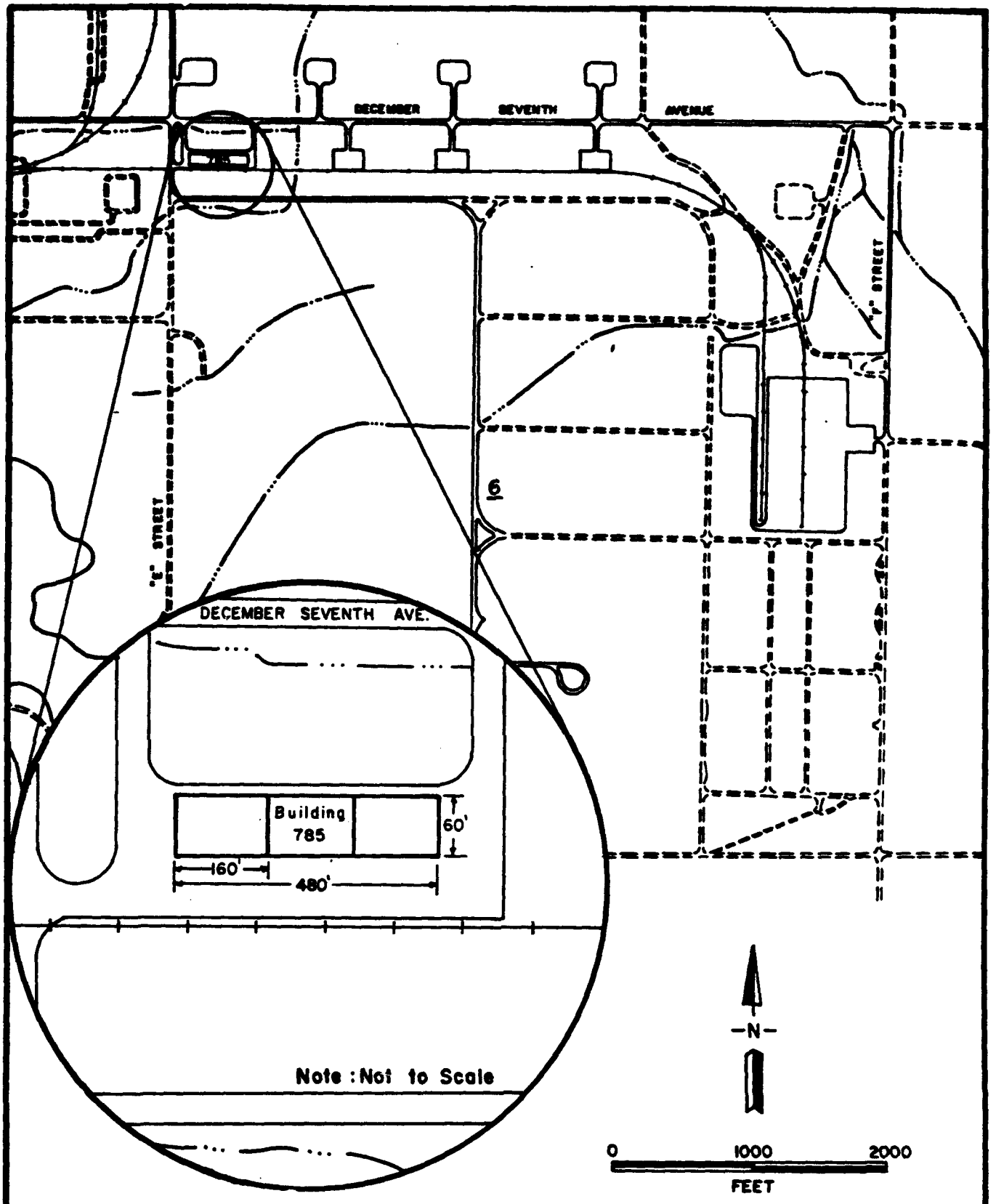

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FIGURE 32-7

Additional Storage Facility, Building 785

Rocky Mountain Arsenal, Task 32

Prepared by: Ebasco Services Incorporated

- The container holding hazardous waste must be in good condition;

- The container must be made of, or lined with, materials which will not react with the hazardous waste being stored;

- The container must be closed at all times during storage, and cannot be opened, handled, or stored in a manner which can rupture the container or cause it to leak;

- Weekly visual inspection of the containers and containment system must be completed to detect any leaking containers or any deterioration of the container and containment system, Figure 32-8;

- The containers will be elevated to prevent contact with any accumulated liquid within the containment system;

- The containment system will be designed to be free of cracks, impervious to the waste being stored, and sloped; and

- A notice of contents and floor plan must be posted at doors leading into each of the storage areas.

The necessary requirements for storage of liquid wastes include those for solid waste storage with the following additional requirements.

- A containment berm must be provided to hold 10 percent (10%) of the total volume of the containers or the volume of the largest container, whichever is larger;

- All floor drains within spill control berms must be capped or plugged; and

- Eyewash stations and emergency showers must be provided within each storage area.

Figure 32-8

DRUMMED WASTE STORAGE FACILITY

WEEKLY INSPECTION SHEET

INSPECTOR _____

SIGNATURE _____

DATE _____ TIME _____

AMOUNT OF SPACE LEFT IN BUILDING _____

_____

DAMAGES _____

_____

COMMENTS _____

_____

_____

_____

_____

_____

Maintenance of the containment storage aspects of the facility will be conducted by Ebasco, and maintenance of the building will be conducted by PMO/RMA.

3.3.3 Ultimate Disposal

Soil drums which have been sampled and analyzed will be held if contaminated until after the RI/FS, or will be disposed in a central soils return area if uncontaminated. Uncontaminated soil is defined as soil in which all analyte concentrations are below PMO/RMA indicator levels or the upper end of the indicator ranges, as appropriate (Table 32-1). The designated site for disposal is located in Section 30, the RMA Sanitary Landfill. Within the landfill, a site will be designated for the disposal of the uncontaminated soil wastes.

Soils in which analyte concentrations are above indicator levels may be held until the RI/FS has been completed. These contaminated soils will be stockpiled in drums in the storage facility.

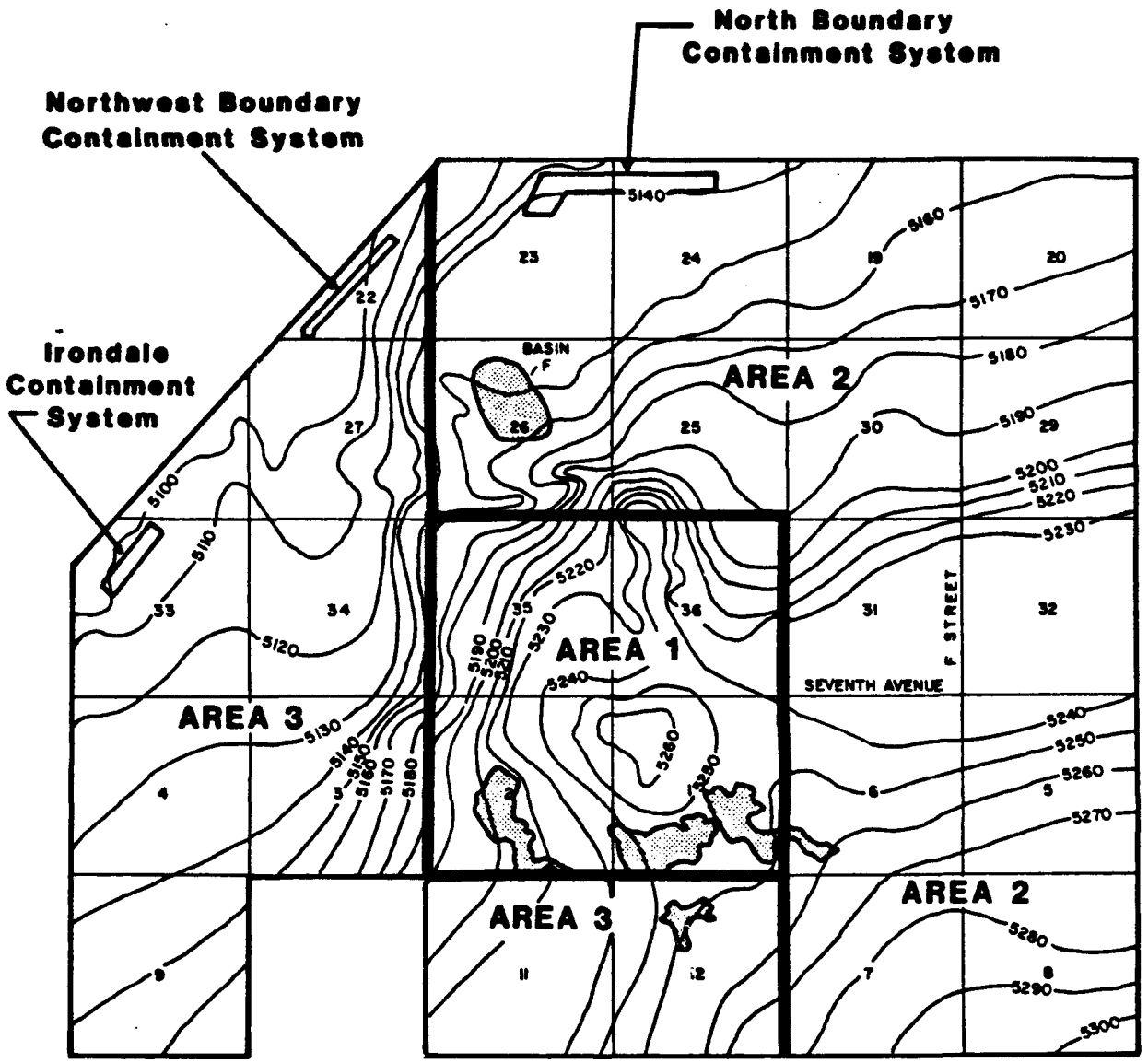
Disposal of well water will depend upon the well location. Most of the well water, including purge and development water, will be discarded in appropriate boundary containment treatment systems or in the SPLWTF, depending upon the location of the well with respect to the boundary system or South Plants, and upon whether the contaminants in the well water are treatable in one of the boundary systems of SPLWTF. The chemical contaminant characteristics of well water will be identified by the known chemical history of that well, or if the water is from a new well it will be held until analytical data are available. The three areas in which the wells are located are shown in Figure 32-9. Area 1 consists of all wells in the South Plants area (Sections 1, 2, 35, and 36). The water removed from these wells will be treated and disposed in the SPLWTF. Area 2 well water will be disposed through the North Boundary Containment System, and Area 3 well water will be disposed through the Northwest Boundary Containment System. Well water generated from wells with known high contaminant concentrations will be held until an alternate disposal option is found.

TABLE 32-1. PMO/RMA SOIL INDICATOR RANGES FOR THE DISPOSAL OF SOIL GENERATED DURING FIELD ACTIVITIES (ug/g).

Analyte	Indicator Level/Range
RMA Target Organic Compounds	DL
Arsenic	10
Cadmium	2.0
Chromium	40
Copper	35
Lead	40
Mercury	0.10
Zinc	80

- Greater than

DL - Laboratory Analytical Detection Limit



10 Foot Contour Interval

Prepared for:

Program Manager's Office for
Rocky Mountain Arsenal Cleanup
Aberdeen Proving Ground, Maryland

FIGURE 32-9

Groundwater Flow Patterns

Rocky Mountain Arsenal, Task 32

Prepared by: Ebasco Services Incorporated

Decontamination water, both drummed and bulk, will be disposed in the SPLWTF after appropriate analyses indicate that the upgraded SPLWTF can handle any contaminants that these liquids may contain. All drummed decontamination water will be added to the bulk holding tanks; when the holding tanks are filled to capacity they will be sampled and analyzed for ICP metals, arsenic, mercury, volatile organics, and semivolatile organics. After all the analytical results have been received, PMO will determine whether or not the decontamination water in the bulk holding tanks will be discarded through the SPLWTF.

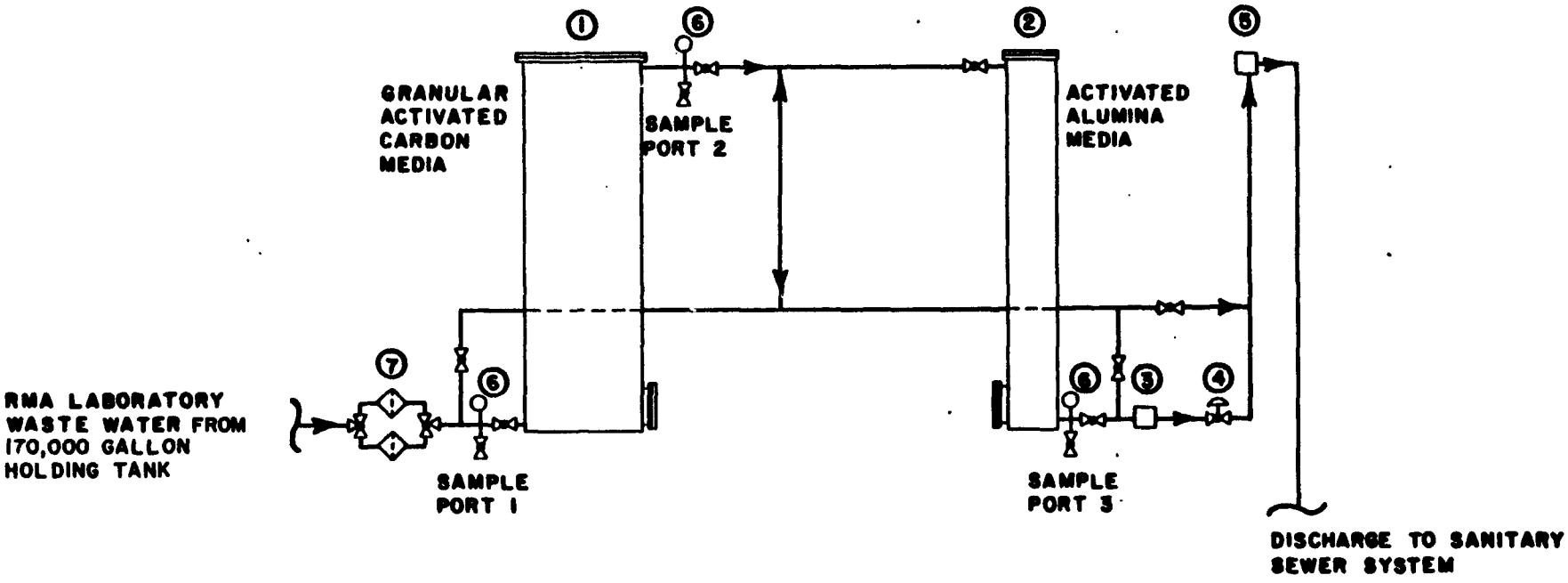
The disposal of large quantities of well water generated during field activities (e.g., pump tests) has not been assessed. Several disposal options have been identified as follows:

- Disposal of the well water into the boundary containment systems;
- Transport and disposal of well water to the Metro Denver Waste Water Treatment Facility (depends greatly on the water quality); and
- Storage of the well water in the cooling tower concrete holding tank (after it has been inspected and epoxy lined) or other holding tanks with gradual disposal of the water into the SPLWTF.

Bulk solids from various field activities will be stored under the task in which it was generated. Task 32 will establish only the procedures for handling and storage of the wastes. All other types of waste (trash, used clothing, and unknowns) will be kept in long-term storage until the RI/FS has been completed or until a disposal option becomes available.

3.3.4 South Plants Laboratory Waste Treatment Facility

Currently, the SPLWTF, Figure 32-10, consists of two 100-micron cartridge filters, a granular activated carbon unit, and an activated alumina unit. The design flow is 2 gallons per minute (gpm). The waste water from the RMA Laboratory and the bulk holding tanks, and well water from field activities in Area 1 will be discarded into a sump connected to a 170,000-gallon holding



LEGEND

①	Organic Removal Treatment Unit
②	Arsenic Removal Treatment Unit
③	Flow Meter with Totalizer
④	Flow Control Valve
⑤	Vacuum Breaker
⑥	Pressure Guage 0-15 PSI
⑦	Cartride Filters 100 Micron
⋈	Ball Valve

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Program Manager's Office for
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Aberdeen Proving Ground, Maryland

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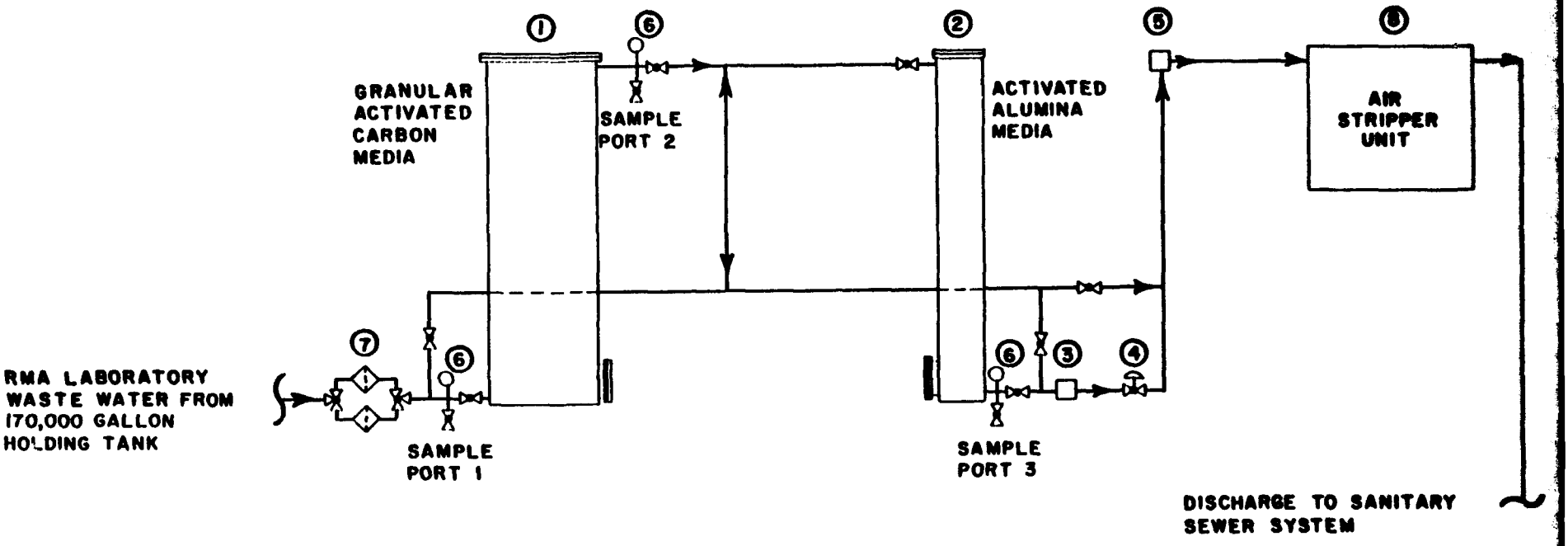
FIGURE 32-10
Existing South Plants Laboratory
Waste Treatment Facility
Rocky Mountain Arsenal, Task 32
Prepared by: Ebasco Services Incorporated

tank. Effluent from this tank flows by gravity to the SPLWTF. The SPLWTF effluent discharges to the Sanitary Sewer Treatment Facility (SSTF)(Figure 32-2). An air stripper will be added to the SPLWTF after the activated alumina unit (Figure 32-11).

The addition of an air stripping unit to the SPLWTF will increase the removal of volatile organics that may not be effectively removed by the carbon adsorption unit. The air stripper unit will be installed in Building 538 next to the existing treatment facility. It will consist of piping leading from the existing system to a holding tank, and then connecting to the air stripper.

The design flow rate through the air stripper will be approximately 5 gpm. The waste water will be recirculated through the air stripper several times before discharging to the SSTF.



LEGEND

①	Organic Removal Treatment Unit
②	Arsenic Removal Treatment Unit
③	Flow Meter with Totalizer
④	Flow Control Valve
⑤	Vacuum Breaker
⑥	Pressure Guage 0-15 PSI
⑦	Cartride Filters 100 Micron
⑧	Air Stripper Unit including all valves and controls, holding tank, blowers, etc.

⋈ Ball Valve

Prepared for:

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Rocky Mountain Arsenal Cleanup
Aberdeen Proving Ground, Maryland

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FIGURE 32-11

Future South Plants Laboratory Waste Treatment Facility

Rocky Mountain Arsenal, Task 32

Prepared by: Ebasco Services Incorporated

4.0 CHEMICAL ANALYSIS PROGRAM

The chemical analysis program for Task 32 was designed to be consistent with the other RI tasks. Analytical methods for this task, including desired indicator levels, high range concentration, sample holding times, reference method, and principle of method are described in more detail in the RMA Procedure Manual, Volume I, Sampling. Samples collected from each bulk holding tank will be screened for volatile organics, semivolatile organics, ICP metals, arsenic, and mercury as listed in Table 32-2. During the treatment and the disposal of the decontamination water, effluent samples from the SPLWTF will be analyzed for any analytes which were found in significant concentrations in the bulk holding tanks. Table 32-3 summarizes the number of expected samples and analyses to be run on the bulk holding tanks and influent and effluent samples.

Table 32-2. Analytical Methods/Liquid Matrix for Task 32.

Analysis/Matrix/Analytes	Detection Limit[a]	High Range Concentration[b]	Hold Time	Level of Certification	Reference Methods
Volatile Halo Organics/Water			14 days (1)	Quantitative	EPA 601 (1)
Chlorobenzene	1.0 ug/l	50 ug/l			
Chloroform	1.0 ug/l	50 ug/l			
1,1-Dichloroethane	1.0 ug/l	50 ug/l			
1,2-Dichloroethane	1.0 ug/l	50 ug/l			
1,1,1-Trichloroethane	1.0 ug/l	50 ug/l			
1,1,2-Trichloroethane	1.0 ug/l	50 ug/l			
Tetrachloroethylene	1.0 ug/l	50 ug/l			
Trichloroethylene	1.0 ug/l	50 ug/l			
1,2-trans-Dichloroethylene	1.0 ug/l	50 ug/l			
Dichloromethane	1.0 ug/l	50 ug/l			
Carbon tetrachloride	1.0 ug/l	50 ug/l			
Volatile Arom. Organics/Water			7 days (1)	Quantitative	EPA 602 (1)
Benzene	1.0 ug/l	50 ug/l			
Toluene	1.0 ug/l	50 ug/l			
Xylenes	1.0 ug/l	50 ug/l			
Ethyl benzene	1.0 ug/l	50 ug/l			
Metals by AA/Water					
Arsenic	10 ug/l	100 ug/l	6 mos (5)	Quantitative	EPA 206.2 (5)
Mercury	0.1 ug/l	10 ug/l	28 days (5)	Quantitative	EPA 245.1 (5)

Table 32-2. Analytical Methods/Liquid Matrix for Task 32 (Continued).

Analysis/Matrix/Analytes	Detection Limit[a]	High Range Concentration[b]	Hold Time	Level of Certification	Reference Methods
Metals by ICP/Water			6 mos (5)	Quantitative	EPA 200.7 (5)
Chromium	50 ug/l	5,000 ug/l			
Cadmium	50 ug/l	5,000 ug/l			
Lead	50 ug/l	5,000 ug/l			
Zinc	50 ug/l	5,000 ug/l			
Copper	50 ug/l	5,000 ug/l			
Magnesium	10 mg/l	1,000 ug/l			
Calcium	100 mg/l	1,000 ug/l			
Sodium	100 mg/l	1,000 ug/l			

Table 32-3

Summary Table of the Number of Expected Samples and Analyses

	Type	No. of Samples	Analyses
Bulk Holding Tanks	Water	36	Volatile organics Semivolatile organics ICP metals Arsenic Mercury
Influent and Effluent Samples from SPLWTF[1]	Water	60	Volatile organics

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1 Samples will only be analyzed by Ebasco if the RMA Laboratory services are unable to complete the analysis themselves.

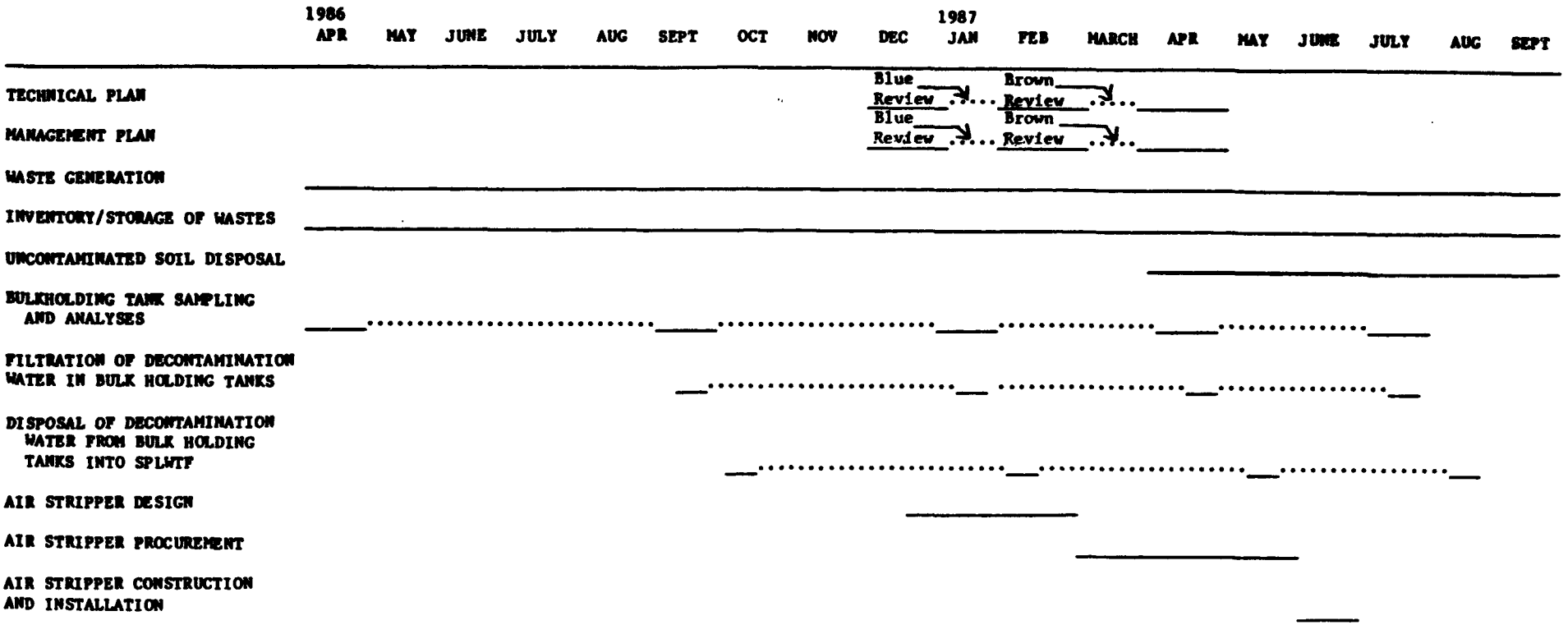
5.0 QUALITY ASSURANCE PROGRAM

An integral part of the Technical Plan is the project-specific Quality Assurance (QA) plan describing Ebasco's procedures to monitor and control field and analytical efforts at RMA. Ebasco has developed a project QA plan applicable to geotechnical, sampling, and analytical activities. For Task 32, Ebasco will adhere to, and comply with, the established requirements presented in Volume II of the RMA Procedures Manual.

6.0 DATA MANAGEMENT PROGRAM

Data management activities for Task 32 will be conducted using Ebasco's in-house computer system rather than using PMO's IR-DMS Univac 1100/60. All data will be entered into a d-Base III program and presented in an appropriate format. In addition, a crosscheck of all analyses will be conducted on samples associated with each soil drum to determine whether the contents will be disposed immediately or placed in long-term storage.

FIGURE 32-12
PROPOSED PROJECT SCHEDULE
TASK 32 - SAMPLING WASTES
ROCKY MOUNTAIN ARSENAL



Task 32
4832A/1115A
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APPENDIX A

Bulk Holding Tanks Water Sampling Procedures

1.0 INTRODUCTION

The water sampling program for the bulk holding tanks will be conducted when each tank has been completely filled. The following procedures will be used when sampling.

2.0 SAMPLING PERSONNEL

- o Ebasco Field Health and Safety Coordinator
- o Sample Collector
- o Support

3.0 BULK HOLDING TANK SAMPLING

The method described here is the primary method for water tank sampling. Other methods can be used if the particular sampling need arises. When using any of these methods, it is understood that outer gloves will be removed and replaced with clean gloves prior to taking additional samples.

3.1 Glass Tubes

Liquid samples from opened containers will be collected using lengths of glass tubing. The glass tubes are normally 122 cm in length and 6 to 16 mm inside diameter. Larger diameter tubes may be used for more viscous fluids. The tubing will be broken up and drummed after the sample has been collected. This method should not be attempted with less than a two-person sampling team.

Procedure for Use

1. Remove the cover from the container to be sampled.

2. Mix tank thoroughly

3. Insert the glass tubing almost to the bottom of the container. Try to keep at least 30 cm of tubing above the top of the container.

4. Allow the waste in the drum to reach its natural level in the tube.

5. Cap the top of the tube with a safety-gloved thumb or a rubber stopper.

6. Carefully remove the capped tube from the drum and insert the uncapped end in the sample container.

7. Release the thumb or stopper on the tube and allow the sample container to fill to approximately 90 percent of its capacity.

8. Repeat steps 2 through 6 if more sample is needed to fill the sample container.

9. Remove the tube from the sample container and place the tube in the container being sampled.

10. Cap the sample container.

11. Replace the cover of the container.

12. Seal sampled container with tape and tag date and time of sampling.

13. Deliver the sample to the sample coordinator.

14. Label and affix the sample tag; record information in field log book; and complete sample analysis request sheet and chain of custody record.

APPENDIX B

South Plants Laboratory Waste Treatment Facility Sampling Procedures

1.0 INTRODUCTION

The water sampling program for the South Plants Laboratory Waste Treatment Facility (SPLWTF) will commence upon disposal of decontamination water from the bulk holding tanks into the SPWTL. The following procedures will be used when sampling.

2.0 SAMPLING PERSONNEL

- o Sample Collector
- o Support

3.0 SOUTH PLANTS LABORATORY WASTE TREATMENT FACILITY SAMPLING

Sampling will begin as soon as practical after all the decontamination water has been added to the SPLWTF. An influent and effluent sample will be taken daily at approximately the same time. All chain-of-custody procedures will be followed. Outer gloves will be removed and replaced with clean gloves prior to taking additional samples.

4.0 SAMPLING PROCEDURES

The following procedures are to be used during SPLWTF water sampling.

1. A polyethylene plastic sheet will be spread on the ground inside the treatment facility to prevent any type of contamination to the building or equipment from occurring.

2. The influent sample will be taken first and the time of sampling will be noted.

3. The effluent sample will be taken after the retention time during the process has been attained.

4. Samples will be collected in appropriate bottles for organic analyses. The bottles are prepared by the laboratory and distributed to the field prior to sampling. Samples for volatile analysis will be collected in two screw cap, teflon, ripton top, amber glass, 40 ml vials.

5. All sample bottles will be filled to capacity with no air bubbles remaining in container. Loss of volatile organic compounds by evaporation will be minimized by rapidly transferring the water sample from the SPLWTF to the 40 ml vials. At no time will the sample be aerated prior to placing the sample in the vials.

6. All pertinent information, time and date, sampling techniques and names of personnel will be entered on the data collection sheet and in a field notebook.

APPENDIX C

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VIII
ONE DENVER PLACE — 999 18TH STREET — SUITE 1300
DENVER, COLORADO 80202-2413

JUL 19 1985

Ref: 8HWM-SR

Colonel W. N. Quintrell
Deputy Project Manager
AMXTH-AS-O
Department of the Army
Building 4435
U. S. Army Toxic & Hazardous
Materials Agency
Aberdeen Proving Ground
Maryland 21010-5401

Dear Colonel Quintrell:

In EPA's December 1984 review of draft technical plans for two Rocky Mountain Arsenal remedial investigation studies, our headquarters staff questioned the fate of CERCLA waste disturbed by related drilling activities. We have reviewed that issue in depth since then, and have identified a procedure for you to use that will comply with EPA policy and not overly impact the Army's study efforts.

We hope you have been following the attached procedure for several weeks now. However, we have withheld its transmittal to you, pending the State's review and subsequent discussions with us. Although we find the procedure acceptable, the State believes it is not bound by EPA policy and takes a different interpretation on the matter, as reflected in the attached letter to us. They would prefer to discuss the matter with the Army directly.

Our goal is to ensure progress with the Army studies, while following EPA policy and handling of the disturbed wastes in the environmentally responsible manner provided in the enclosure. Please contact us if there is more we can do to facilitate achievement of that goal.

Sincerely yours,

Robert L. Duprey, Director
Waste Management Division

Enclosure

cc: Tom Looby, CDH (w/enclosures)

June 12, 1985
(minor clarifications, 7/19/85)

EPA Region VIII procedure for handling of materials from drilling, trench excavation, and decontamination during CERCLA RI/FS operations at the Rocky Mountain Arsenal

At the Rocky Mountain Arsenal, extensive CERCLA RI/FS operations are being conducted by the Department of the Army and EPA. There is a relatively large volume of potentially contaminated material which will disturbed by operations such as drilling, trenching, and decontamination of personnel and equipment. Therefore, EPA believes it is necessary to develop a procedure for handling such materials. The following procedure has been developed with the intent of providing a sufficient level of protection for the environment, while allowing operations to proceed unhindered by administrative requirements. The Army should adopt the following procedure for handling materials from such operations:

1. Use past records and studies to identify possible areas of contaminated soil and/or ground water plumes.

2. At sites thought to be uncontaminated:

   Use HNU, OVA, and other devices, as appropriate for the possible wastes at the respective site, to screen water, mud and decontamination materials, taking readings at least every 5 feet.

   Use constant visual and odor inspection to screen such materials.

   If all screening techniques indicate no contamination, dispose of materials in the most practical way (dump on ground, trench, etc.).

   The Army, EPA, or State may take samples of, and chemically analyze, any material to confirm the screening techniques findings. And

   If any screening technique indicates contamination, drum that material, and all material from there on down the hole or trench.

3. At sites thought possibly contaminated, either on the surface or lower:

   Follow the same procedures described above for sites thought to be uncontaminated.

4. At sites known to be contaminated, either on the surface or lower:

Evaluate as described above for sites thought to be uncontaminated, until near (clearly still above) the known contamination level.

If evaluation shows contamination, drum as above.

If evaluation shows no contamination, discard as above. And

Clearly before reaching known contamination level, begin drumming all material, despite screening technique results.

5. All drummed material:

Must be moved to a site meeting RCRA Part 265 design standards within three months of drumming, unless tested non-hazardous before that time.

May be stored at such site until EPA approval of its interim on-site treatment, disposal, or a final CERCLA remedy. And

The storage site must comply with pertinent substantive RCRA requirements, but need not be permitted.

6. Testing procedures:

Any drummed material may be deemed hazardous without testing, but each drum must be identified (properly labelled) as the RCRA waste(s) from the respective drill site known from past studies, drilling tests, and/or screening results. However, later testing may be required by a RCRA landfill for acceptance for disposal.

Each drum not thus deemed-hazardous-without-testing must be tested within six weeks of drumming. And, if drums are to be tested,

A drum sampling procedure(s) shall be proposed, for approval by EPA. The procedure(s) shall provide for obtaining a representative sample(s) from each drum or set of drums containing similar material.

A testing methodology(s) shall be proposed, for approval by EPA; the methodology(s) may vary by sample.

Alternately, testing performed on core samples collected at various depths may be used in categorizing the drummed material, if approved by EPA.

A list of wastes for which each sample is to be tested shall be proposed, for approval by EPA. Each list shall consist of at least indicator parameters for the suspected RCRA waste(s) from the originating drill site; such parameters shall be chosen based on their prevalence, mobility, ease of detection, etc.

7. Determination of fate:

Each test result shall be compared with any established RCRA level and with NPDES standards for each waste found present, unless EPA has agreed to a different level for that waste - which then use.

Each waste thus tested nonhazardous may be discarded in the most practical manner.

Each waste thus deemed or tested hazardous must be managed substantively as a RCRA waste, until EPA approves of its interim on-site treatment, disposal, or a final CERCLA remedy.